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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,202	01/30/2001	Rahul Khanna	042390.P10727	4484

7590 10/19/2004

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EXAMINER

KING, JUSTIN

ART UNIT	PAPER NUMBER
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2111

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/773,202

Applicant(s)

KHANNA, RAHUL

Examiner

Justin I. King

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/2/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-11, 15, 17-19, and 25-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 7 and 17 recite the limitation "device drivers and/or OPROMs" in the second limitation. Claim 25 recites the limitation "device drivers and/or OPROMs" in the second limitation of the performing functions. The language of "and/or" is indefinite. Claims 8-11, 15, 18-19, and 26-27 are rejected because they incorporate the limitations of the claims 7, 17, and 25.

4. Claim 15 recites the limitation "the article of manufacture of claim 9" in line 1. There is insufficient antecedent basis for this "article of manufacture".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art, Fung et al. (U.S. Patent No. 6,301,011), Furner et al. (U.S. Patent No. 5,974,474), and Dinallo (U.S. Patent No. 5,727,212).

Referring to claim 1: The admitted prior art (figure 3 and specification, page 2, last paragraph) discloses sending a resource access request to a device driver or OPROM and sending an resource access command corresponding to the device access request from the device driver or OPROM. The admitted prior art does not disclose the abstraction layer interface, which hides the resource access methods from the device driver or OPROM. The admitted prior art also does not explicitly disclose determining the particular access command is authorized.

Fung discloses an interface (figure 2, structure 420) verifying whether a resource operation corresponding to the resource access command is authorized to be performed on the device; determining a resource access method (figure 3, structure 428, shared library) that may be implemented to cause the device to perform the resource operation; and calling the resource access method(s) to perform the resource operation on the device. Fung teaches that it is known to manage the device operations with the structure design of placing an interface with enclosed resource access methods between the I/O devices and the requesters.

Furner discloses an interface between the hardware driver and the hardware. Furner teaches that it is known to place an interface/proxy between the hardware and drivers for selecting the best suitable driver (abstract). Furner does not disclose that the interface hides the resource access methods from the device driver or OPROM.

Dinallo discloses an abstraction layer interface bridging the Object Oriented Programming (OOP) components to the existing procedural drivers (figures 2 and 5-8). Dinallo isolates the OOP components from any device driver by encapsulating the specific driver information (abstract), which is the claimed hiding the resource access methods from the device driver or OPROM.

Hence, it would have been obvious to one having ordinary skill in the computer art to combine the admitted prior art, Fung, Furner, and Dinallo because Fung enables one to plug and play an output device dynamically without extensive revision of the system (column 1, lines 43-35), Furner enables the plug and play system to select a better driver for optimized operations (column 3, lines 33-35), and Dinallo enables one to reuse the existing procedural device drivers by constructing an interface bridging the OOP components to the existing procedural drivers (column 1, lines 51-56).

Referring to claim 2: Claims 1's argument applies; furthermore, Furner discloses each hardware device includes a bus tag and a device identifier for plug-and-play (column 4, lines 37-39, column 6, lines 28-44). Thus, Furner discloses requesting data to be read from the device, further comprising returning data read from the device to the device driver or OPROM.

Referring to claim 3: Claim 1's argument applies; furthermore, Furner teaches that it is known to use a database (figure 5, structure 117) in the layer; Fung discloses a shared library (column 2, lines 3, figure 3, structure 428), which is a database with resource access methods.

Referring to claim 4: Claim 1's argument applies; furthermore, Furner discloses a database containing resource information (figures 2A-E, figure 5, structure 117) corresponding to any devices in a hierarchy of the root bus. Furner further discloses that the reference table contains the hardware instance information (figure 5, structure 129, column 13, lines 58-61), wherein the hardware instance information includes the bus information (column 4, lines 37-57, figures 3A-D; thus, Furner discloses the storing the configuration of a root bus to which the device is directly or indirectly connected to.

Referring to claim 5: Claim 4's argument applies; furthermore, Dinallo discloses the OOP, which provides the object-oriented abstraction and encapsulation.

Referring to claim 6: Claim 6 is rejected as the claim 5's argument, furthermore, the OOP encapsulates the functions from the function callers, so that function caller may not directly access these access functions.

Referring to claim 7: Claim 7 is rejected over the claims 1, 2, and 6's arguments, furthermore, Furner discloses multiple buses (figure 1A).

Referring to claim 8: Claim 8 is rejected over the claim 5's argument.

Referring to claim 9: Both Furner and Fung disclose the database.

Referring to claim 10: Furner discloses providing a record for each device in the database identifying the device, a device driver or OPROM for the device (figure 5, structure 117), and

the root bus for the device (figures 3A-D). Dinallo discloses the OOP, which provides the object-oriented abstraction and encapsulation.

Referring to claim 11: Claim 10's argument applies; furthermore, that the submitted parameters associated with each function call are the identification, resource, and resource access command(s).

Referring to claim 12: The admitted prior art (figure 3 and specification, page 2, last paragraph) discloses sending a resource access request to a device driver or OPROM and sending an resource access command corresponding to the device access request from the device driver or OPROM. The admitted prior art does not disclose the abstraction layer interface, which hides the resource access methods from the device driver or OPROM. The admitted prior art also does not explicitly disclose determining the particular access command is authorized.

Fung discloses an interface (figure 2, structure 420) verifying whether a resource operation corresponding to the resource access command is authorized to be performed on the device; determining a resource access method (figure 3, structure 428, shared library) that may be implemented to cause the device to perform the resource operation; and calling the resource access method(s) to perform the resource operation on the device. Fung teaches that it is known to manage the device operations with the structure design of placing an interface with enclosed resource access methods between the I/O devices and the requesters.

Furner discloses an interface between the hardware driver and the hardware. Furner teaches that it is known to place an interface/proxy between the hardware and drivers for selecting the best suitable driver (abstract). Furner does not disclose that the interface hides the resource access methods from the device driver or OPROM.

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Dinallo discloses an abstraction layer interface bridging the Object Oriented Programming (OOP) components to the existing procedural drivers (figures 2 and 5-8). Dinallo isolates the OOP components from any device driver by encapsulating the specific driver information (abstract), which is the claimed hiding the resource access methods from the device driver or OPROM.

Hence, it would have been obvious to one having ordinary skill in the computer art to combine the admitted prior art, Fung, Furner, and Dinallo because Fung enables one to plug and play an output device dynamically without extensive revision of the system (column 1, lines 43-35), Furner enables the plug and play system to select a better driver for optimized operations (column 3, lines 33-35), and Dinallo enables one to reuse the existing procedural device drivers by constructing an interface bridging the OOP components to the existing procedural drivers (column 1, lines 51-56).

Referring to claim 13: Claim 13 is rejected as claim 2's argument stated above.

Referring to claim 14: Claim 14 is rejected as claim 4's argument stated above.

Referring to claim 15: Claim 15 is rejected as claim 5's argument stated above.

Referring to claim 16: Claim 16 is rejected as claim 6's argument stated above.

Referring to claim 17: Claim 17 is rejected over the claims 12, 13, and 16's arguments, furthermore, Furner discloses multiple buses (figure 1A).

Referring to claim 18: Claim 18 is rejected as claim 15's argument stated above.

Referring to claim 19: Claim 19 is rejected as claims 9 and 10's arguments stated above.

Referring to claim 20: The admitted prior art (figure 3 and specification, page 2, last paragraph) discloses a memory with instructions (figure 3, structures 40, 50, and 52), a device

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(structure 44), a root bus (structure 46), a processor (structure 42), and sending a resource access request to a device driver or OPROM for the device and sending an resource access command corresponding to the device access request from the device driver or OPROM. The admitted prior art also does not explicitly disclose determining the particular access command is authorized.

Fung discloses an interface (figure 2, structure 420) verifying whether a resource operation corresponding to the resource access command is authorized to be performed on the device; determining a resource access method (figure 3, structure 428, shared library) that may be implemented to cause the device to perform the resource operation; and calling the resource access method(s) to perform the resource operation on the device. Fung teaches that it is known to manage the device operations with the structure design of placing an interface with enclosed resource access methods between the I/O devices and the requesters.

Furner discloses an interface between the hardware driver and the hardware. Furner teaches that it is known to place an interface/proxy between the hardware and drivers for selecting the best suitable driver (abstract). Furner does not disclose that the interface hides the resource access methods from the device driver or OPROM.

Dinallo discloses an abstraction layer interface bridging the Object Oriented Programming (OOP) components to the existing procedural drivers (figures 2 and 5-8). Dinallo isolates the OOP components from any device driver by encapsulating the specific driver information (abstract), which is the claimed hiding the resource access methods from the device driver or OPROM.

Hence, it would have been obvious to one having ordinary skill in the computer art to combine the admitted prior art, Fung, Furner, and Dinallo because Fung enables one to plug and play an output device dynamically without extensive revision of the system (column 1, lines 43-35), Furner enables the plug and play system to select a better driver for optimized operations (column 3, lines 33-35), and Dinallo enables one to reuse the existing procedural device drivers by constructing an interface bridging the OOP components to the existing procedural drivers (column 1, lines 51-56).

Referring to claim 21: Claim 21 is rejected as claim 13's argument stated above.

Referring to claim 22: Claim 22 is rejected as claim 14's argument stated above.

Referring to claim 23: Claim 23 is rejected as claim 15's argument stated above.

Referring to claim 24: Claim 24 is rejected as claim 16's argument stated above.

Referring to claim 25: Claim 25 is rejected over the claims 20, 21, and 24's arguments, furthermore, Furner discloses multiple buses (figure 1A).

Referring to claim 26: Claim 26 is rejected as claim 15's argument stated above.

Referring to claim 27: Claim 27 is rejected as claim 19's argument stated above.

Response to Arguments

8. In response to applicant's argument that the prior arts on record would not have rendered the present Application in a manner that the abstraction layer interface hides the resource access method(s) from the device driver or OPROM: The Dinallo discloses an abstraction layer interface bridging the Object Oriented Programming (OOP) components to the existing procedural drivers (figures 2 and 5-8). Dinallo isolates the OOP components from any device

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driver by encapsulating the specific driver information (abstract), which is the claimed hiding the resource access methods from the device driver or OPRM. Dinallo enables one to reuse the existing procedural device drivers by constructing an interface bridging the OOP components to the existing procedural drivers (column 1, lines 51-56).

Conclusion

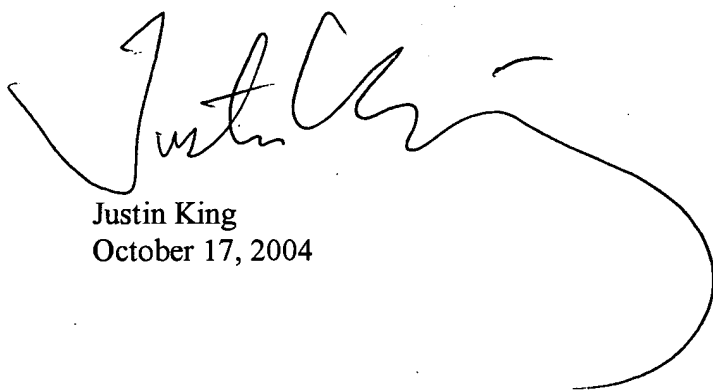
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin I. King whose telephone number is 703-305-4571. The examiner can normally be reached on Monday through Friday, 9:00 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-308-3110. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

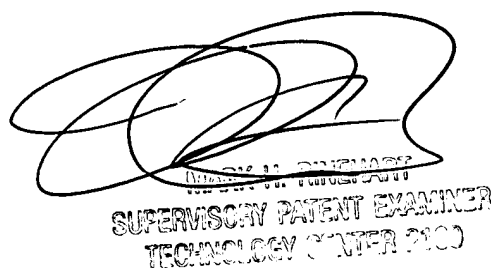
Lastly, paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's

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PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.



Justin King
October 17, 2004



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